

CLAIMS:

1. An analysis method of impurities (color centers) in fluoride characterized in that the method comprises the step of:

irradiating X-rays to a material comprising fluoride, and comparing light transmittances of the material before and after the irradiation of X-rays with each other, thereby analyzing impurities (color centers) in the material.

2. The analysis method of impurities (color centers) in fluoride, characterized in that the fluoride is one of calcium fluoride, barium fluoride, and magnesium fluoride.

3. The analysis method of impurities (color centers) in fluoride of claim 1 or 2, characterized in that annealing is conducted before the X-ray irradiation.

4. The analysis method of impurities (color centers) in fluoride of claim 3, characterized in that the annealing is conducted at 300 to 400°C.

5. The analysis method of impurities (color centers) in fluoride of claim 3 or 4, characterized in that the annealing is conducted for 30 minutes to 2 hours.

6. The analysis method of impurities (color centers) in fluoride of any one of claims 1 through 5, characterized in that the material has a surface which is a mirror ground surface.

7. The analysis method of impurities (color centers) in fluoride of any one of claims 1 through 6, characterized

in that the irradiation is conducted for a period of time of 5 minutes or longer.

8. The analysis method of impurities (color centers) in fluoride of any one of claims 1 through 7, characterized in that the X-rays are provided at an acceleration voltage of 20kV or higher and an electric current of 10mA or more.

9. The analysis method of impurities (color centers) in fluoride of any one of claims 1 through 9, characterized in that the X-ray irradiation is conducted multiple times.

10. The analysis method of impurities (color centers) in fluoride, characterized in that the material is obtained from a melt process as a pre-process for a single crystal growth process.

11. The analysis method of impurities (color centers) in fluoride of any one of claims 1 through 10, characterized in that the impurities are color centers formed by oxides, moisture, and the like.

12. A production method of a single crystal growth oriented material, characterized in that the method comprises the steps of:

in a melt process as a pre-process for a growth process of a single crystal comprising fluoride, taking a part out of the fluoride in a fused state, and bringing the part into an analysis specimen;

analyzing impurities (color centers) of the analysis specimen by the analysis method of any one of claims 1 through 11; and

determining an additive condition of a scavenger based on a result of the analysis.

13. The production method of a single crystal growth oriented material of claim 12, characterized in that the fluoride is barium fluoride ( $\text{BaF}_2$ ), and the scavenger is lead fluoride ( $\text{PbF}_2$ ).